

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY



(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 11 JAN 2006

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Applicant's or agent's file reference 31947-WO-U	FOR FURTHER ACTION		See Form PCT/PEA/416
International application No. PCT/BE2004/000158	International filing date (day/month/year) 04.11.2004	Priority date (day/month/year) 05.11.2003	
International Patent Classification (IPC) or national classification and IPC H02K3/47, H02K3/24			
Applicant ATLAS COPCO AIRPOWER, N.V. et al.			
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau a total of 9 sheets, as follows:</p> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>			
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>			
Date of submission of the demand 06.04.2005		Date of completion of this report 12.01.2006	
Name and mailing address of the International preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016		Authorized Officer Contreras Sampayo, J Telephone No. +31 70 340-4343 	

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**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/BE2004/000158

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

Description, Pages

2, 3, 6-15	as originally filed
1, 4, 4a, 4b, 5	received on 06.04.2005 with letter of 04.04.2005

Claims, Numbers

1-18	received on 06.04.2005 with letter of 04.04.2005
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Drawings, Sheets

1/9-9/9	as originally filed
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☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):

- ~~4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).~~
- ~~☐ the description, pages~~
 - ~~☐ the claims, Nos.~~
 - ~~☐ the drawings, sheets/figs~~
 - ~~☐ the sequence listing (*specify*):~~
 - ~~☐ any table(s) related to sequence listing (*specify*):~~

* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/BE2004/000158

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-18
	No: Claims	
Inventive step (IS)	Yes: Claims	1-18
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-18
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

Reference is made to the following document:

D1: EP-A-1 251 624 (ALSTOM) 23 October 2002 (2002-10-23)

Document D1 is regarded as being the closest prior art to the subject-matter of claim 1 and shows (the references in parentheses applying to this document):

a cooling system for an electric motor or generator consisting of a housing (11) a so called "slotless" tubular stator lamination (14), a rotor (4) of an unspecified type and electric windings (16) which are provided between the stator laminations (14) and the rotor (4). Said cooling system additionally comprising a cooler (set of cooling tubes 24) between which said windings (16) are provided and which is formed of multiple cooling elements (tubes 24) which are provided between the stator laminations (14) and the rotor (4). Said cooling tubes are shaped in the form of teeth directed radially towards the rotor (4), they extend in the axial direction of the stator and in between these tubes axially directed grooves are defined.

The subject-matter of claim 1 differs from this known document D1 in that

the cooling element has an external form of a conventional stator lamination with teeth for providing the windings.

~~The subject-matter of claim 1 is therefore new (Article 33(2) PCT).~~

The problem to be solved by the present invention may be regarded as

- Simplifying the manufacturing process of the cooling system
- Reducing the number of parts
- Allowing the windings to be wound using conventional winding techniques

**INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY
(SEPARATE SHEET)**

International application No.

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The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) for the following reasons:

The prior art document D1 discloses a cooler that consists of a plurality of mutually independent cooling tubes. Assembling a machine with multiple independent cooling tubes in the airgap is more time consuming and complex than to use single cooler with the form of a conventional stator lamination upon which the windings can be placed using standard techniques known in the art.

Claims 2-17 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.